

REMARKS/ARGUMENTS

The Office Action mailed October 5, 2005, has been received and reviewed. Claims 1 through 31 are currently pending in the application. Applicants acknowledge and affirm the election to prosecute the claims of Group I, claims 1 through 19. Claims 20 through 31 are withdrawn from consideration as being drawn to a nonelected invention. Claims 1 through 19 stand rejected. Applicants have amended claims 1 through 19 and respectfully request reconsideration of the application as amended herein. No new matter has been added.

Response to Restriction Requirement

The Examiner has identified the following two groups of claims and asserted that these two groups of claims are directed to two distinct inventions:

Group I: claims 1-19

Group II: claims 20-31

Applicants herein affirm the provisional election made, with traverse, by Joseph Walkowski during a telephone conversation with the Examiner on September 26, 2005 to prosecute the invention of Group I, claims 1-19, as identified by the Examiner.

Applicants respectfully assert that the product as claimed in Group I cannot be made by another and materially different process than that set forth in Group II. In particular, the method limitations are recited broadly using the term "forming," which includes molding, machining, or any other method by which a cutting element pocket or any other recess may be formed.

Applicants respectfully assert that the Examiner has inappropriately assumed that the recited methods of Group II do not include methods in which a cutting element pocket or other recess is formed by molding. Therefore, Applicants request that the Examiner withdraw the restriction requirement and consider both the claims of Group I and the claims of Group II in the present application.

35 U.S.C. § 102(b) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 4,553,615 to Grainger

Claims 1 through 5, 9 through 12, 15, 16, 18, and 19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Grainger (U.S. Patent No. 4,553,615). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Applicants assert that independent claim 1, as currently amended, is not anticipated by Grainger because Grainger does not expressly or inherently describe “a portion of [a] substantially cylindrical body of [a] cutting element [that] is **directly secured** to at least a portion of [a] substantially arcuate surface of [a] steel bit body,” as recited in claim 1.

Grainger describes a cutting element 6 that is disposed and supported entirely within a bush 8, the cutting element 6 and the bush 8 set in a hole or pocket 7 in the blade 5 of a bit. Grainger, column 3, lines 12-14, 18-21. Each cutting element 6 includes a spindle 11 that is journaled in the bush 8. Id., column 3, lines 38-39. As seen in, for example, FIG. 2 of Grainger, the bush 8 is directly secured to a portion of an arcuate surface of a blade 5 of a bit body, but the cutting element 6 is not. The cutting element 6 is secured to the bush 8, and not directly to any part of the bit body.

As Grainger does not describe a cutting element that is directly secured to at least a portion of a substantially arcuate surface of a steel bit body, as recited in independent claim 1, Applicants assert that claim 1 is not anticipated by Grainger and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(b).

Applicants additionally assert that independent claim 1, as currently amended, is not anticipated by Grainger because Grainger does not expressly or inherently describe a drill bit “wherein at least a portion of [a] substantially planar surface of [a] cutting element **matingly engages** at least a portion of [a] substantially planar surface of [a] support element,” as also recited in claim 1.

The Examiner asserts at page 4 of the outstanding Office Action that Grainger describes a drill bit in which a “cutting element pocket [comprising] a support element 8 affixed to the bit body and...configured to matingly engage at least a portion of the substantially planar surface distal to the cutting face of the cutting element disposed therein....” Applicants respectfully disagree.

As previously discussed, the rotatable cutting element 6 of the drill bit described by Grainger is journalled in a bush 8, which is secured to the bit body. Grainger, column 3, lines 22, 38. In this configuration, “contact with the formation causes the rotatable cutting elements to rotate and thus all of the cutting edge is used for the cutting action.” Id., column 4, lines 22-25. While the rotatable cutting element 6 described by Grainger may have a substantially planar surface distal to the cutting face, and the bush 8 may have a substantially planar surface at least partially defining a cutter pocket recess, these surfaces clearly cannot “matingly engage” one another, as recited in claim 1, as this would interfere with or preclude relative rotation therebetween, as described by Grainger. As clearly shown in the figures of Grainger, a gap is provided between these planar surfaces in each embodiment described therein.

As Grainger does not describe a drill bit wherein at least a portion of a substantially planar surface of cutting element that is distal to a cutting surface matingly engages at least a portion of a substantially planar surface of the support element affixed to the steel bit body, Applicants assert that claim 1 is not anticipated by Grainger and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(b) for this additional reason.

Applicants respectfully assert that each of claims 2 through 5, 9 through 12, 15, 16, 18, and 19 is allowable at least because each depends either directly or indirectly from claim 1, which is allowable for the reasons previously discussed in relation to claim 1. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of each of claims 2 through 5, 9 through 12, 15, 16, 18, and 19 under 35 U.S.C. § 102(b).

Regarding dependent claim 10, Applicants additionally assert that Grainger does not describe a drill bit having a steel bit body that “includes a plurality of **retention recesses**, each retention recess extending into the bit body from [a] substantially arcuate surface... [of the steel bit body], at least a portion of [a] support element being disposed within [each] retention recess,” as

recited in dependent claim 10 as currently amended. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 10 under 35 U.S.C. § 102(b) for this additional reason.

Regarding dependent claim 11, Applicants additionally assert that Grainger does not describe a drill bit wherein “at least a portion of [a] support element...is **affixed to [a] bit body within [a] retention recess**,” as recited in dependent claim 11 as currently amended. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 11 under 35 U.S.C. § 102(b) for this additional reason. Applicants additionally assert that claim 11 is allowable at least because claim 11 depends directly from claim 10, which is allowable for the reasons previously discussed.

Regarding dependent claim 12, Applicants additionally assert that Grainger does not describe a drill bit having a “support element [that] is **press fit** into [a] retention recess,” as recited in dependent claim 12. In contrast, the bush 8 described by Grainger is “held in place by brazing or, if the blade 5 is of matrix material, by being put in the mould during the formation of the blade, the infiltrating metal alloy binder used in that process serving to secure the bush to the adjacent matrix material.” Grainger, column 3, lines 22-26. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 12 under 35 U.S.C. § 102(b) for this additional reason. Applicants additionally assert that claim 12 is allowable at least because claim 12 depends directly from claim 10, which is allowable for the reasons previously discussed.

Regarding dependent claim 19, Applicants additionally assert that Grainger does not describe a drill bit having a steel bit body that “includes a plurality of **retention recesses**, each retention recess extending into the bit body from a substantially arcuate surface ... [of the steel bit body], at least a portion of [the] support element being disposed within [a] retention recess,” as recited in dependent claim 19 as currently amended. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 19 under 35 U.S.C. § 102(b) for this additional reason.

Anticipation Rejection Based on U.S. Patent No. 4,200,159 to Peschel et al.

Claims 1 through 5 and 9 through 14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Peschel et al. (U.S. Patent No. 4,200,159). Applicants respectfully traverse this rejection, as hereinafter set forth.

Applicants assert that independent claim 1, as currently amended, is not anticipated by Peschel et al. because Peschel et al. does not expressly or inherently describe “a **steel bit body**,” as recited in claim 1.

Peschel et al. describes a “[t]ool for drilling bore holes and earth formations in which a bit body matrix, including tungsten carbide, has a plurality of carriers secured thereto, to each of which a cutting element is secured by soldering, after the body matrix has been produced, to avoid subjecting the diamond material embodied in the cutting element to the high temperatures required to produce the matrix body, which would have deleterious effects on the diamond.” Peschel et al., Abstract of the Invention. Peschel et al. teaches that “it is ... possible to make the carrier of steel ...” (Id., column 1, line 65), but does not describe, teach, or suggest a steel bit body.

As Peschel et al. does not describe a steel bit body, as recited in independent claim 1, Applicants assert that claim 1 is not anticipated by Peschel et al. and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(b).

Applicants additionally assert that independent claim 1, as currently amended, is not anticipated by Peschel et al. because Peschel et al. does not expressly or inherently describe a drill bit “wherein at least a portion of [a] substantially cylindrical body of [a] cutting element is **directly secured** to at least a portion of [a] substantially arcuate surface of [a] steel bit body,” as also recited in claim 1.

In contrast, Peschel et al. describes a drill bit having a cutting element 3 that is directly secured to a carrier, such as carrier 7 shown in FIG. 3 and carrier 17 shown in FIG. 5. Peschel et al. does not describe, teach, or suggest that the cutting element 3 is directly secured in any way to the body 2 of the drill bit described therein, which again is formed of a matrix material and not steel.

As Peschel et al. does not describe a cutting element that is directly secured to a bit body, as recited in independent claim 1, Applicants assert that claim 1 is not anticipated by Peschel et al.

and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(b).

Applicants respectfully assert that each of claims 2 through 5 and 9 through 14 is allowable at least because each depends either directly or indirectly from claim 1, which is allowable for the reasons previously discussed in relation to claim 1. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of each of claims 2 through 5 and 9 through 14 under 35 U.S.C. § 102(b).

Regarding dependent claim 12, Applicants additionally assert that Peschel et al. does not describe a drill bit having a “support element [that] is **press fit** into [a] retention recess,” as recited in dependent claim 12. In contrast, the carriers described by Peschel et al. are “soldered, cemented, or welded” to the bit body. Peschel et al., column 2, lines 58-59. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 12 under 35 U.S.C. § 102(b) for this additional reason.

Anticipation Rejection Based on U.S. Patent No. 4,199,035 to Thompson

Claims 1, 3, 4, 6 through 8, and 15 through 19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Thompson (U.S. Patent No. 4,199,035). Applicants respectfully traverse this rejection, as hereinafter set forth.

Applicants assert that independent claim 1, as currently amended, is not anticipated by Thompson because Thompson does not expressly or inherently describe “a portion of [a] substantially cylindrical body of [a] cutting element [that] is **directly secured** to at least a portion of [a] substantially arcuate surface of [a] steel bit body,” as recited in claim 1.

Thompson describes a drill bit that includes a plurality of cutting elements 17 that are mounted in a plurality of recesses 19. Thompson, column 3, lines 40-42. “The bit...further comprises means 41 for threadably securing cutting element 17 in recess 19. Securing means 41 comprises a bushing 43 with a threaded inner wall 45, a sleeve 47 having a threaded outer wall 49 in threaded engagement with bushing wall 45.” Id., column 4, lines 14-19. “When crown 15 is constructed of a hard matrix material, bushing 43 may be constructed, for example, of steel and may be fixed in a recess 19 by molding of the bushing 43 in crown 15 during formation of crown

15. When crown 15 is made of steel, bushing 43 may be formed as an integral part of the crown.” Id., column 4, lines 29-35.

The cutting elements 17 described by Thompson are directly secured to the means 41 for securing the cutting elements 17 in the recesses 19 of the bit body, and are not directly secured to at least a portion of a substantially arcuate surface of a steel bit body, as recited in claim 1.

As Thompson does not describe a cutting element that is directly secured to at least a portion of a substantially arcuate surface of a steel bit body, as recited in independent claim 1, Applicants assert that claim 1 is not anticipated by Thompson and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(b).

Applicants respectfully assert that each of claims 3, 4, 6 through 8, and 15 through 19 is allowable at least because each depends either directly or indirectly from claim 1, which is allowable for the reasons previously discussed in relation to claim 1. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of each of claims 3, 4, 6 through 8, and 15 through 19 under 35 U.S.C. § 102(b).

Regarding dependent claim 7, Applicants additionally assert that Thompson does not describe a drill bit wherein an “anchor element is **press-fit** into a retention recess within the bit body,” as recited therein. With reference to FIG. 2B, Thompson describes the securing means 41 additionally comprising “a sleeve locking means 71 to secure the sleeve against rotation relative to bushing 43. The sleeve lock 71 may comprise a metal pin 73 fitted into a hole 75 drilled longitudinally of the threaded interface between bushing 43 and sleeve 47. The sleeve lock 71 may be constructed by drilling hole 75 after sleeve 47 has threadably secured cutting element 17 in recess 19 and thereafter driving metal pin 73, for example of steel, into hole 75. Thompson, column 4, lines 48-57. With reference to FIG. 2C, Thompson describes a locating means 61 provided in the base of a recess 19 for preventing rotation of cutting element 17 about the longitudinal axis of the element 17. Thompson, column 4, lines 58-60. “The locating means 61 may comprise, for example, a metal pin 62 passing through an aperture 64 in shim 60 and having the ends thereof fitted into a recess 63 formed in crown 15 and into a recess in the lower surface of stud 31, respectively.” Id., column 4, lines 60-65. “The rotational securement of the stud 31 enables the cutting elements 17 to be easily oriented on the crown 15 so as to engage a rock surface at the proper angle.” Id., column 4, lines 65-68. Thompson does not, however,

describe, teach, or suggest that the pin 62 is press-fit into the recess 63 formed in the crown 15. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 7 under 35 U.S.C. § 102(b) for this additional reason.

Regarding dependent claim 8, Applicants additionally assert that Thompson does not describe a drill bit wherein an “anchor element is **deformed** within at least one of [an] aperture of [a] support element and a retention recess in the drill bit,” as recited therein. The Examiner asserts at page 9 of the outstanding Office Action that “the anchor element 73 (described by Thompson) is inherently deformed in the aperture of the support element because driving a steel pin into an aperture will cause some sort of deformation....” Applicants respectfully disagree and assert that pins can be and are often driven into apertures without causing deformation of the pins. Thompson does not describe the relative dimensions between the metal pins and recesses described therein, the forces with which the pins are inserted into the recesses described therein, or the shape of the pins before and after being inserted into the recesses. Thompson merely teaches that the pins 62, 73 are “fitted” and “driven” into the respective holes or recesses. Thompson, column 4, lines 51-52, 56, 63. Therefore, it clearly cannot be held that Thompson inherently describes deforming an anchor element. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 8 under 35 U.S.C. § 102(b) for this additional reason.

Regarding dependent claim 16, Applicants additionally assert that Thompson does not describe a drill bit wherein a “support element...is affixed to the bit body by at least one of welding, brazing, press-fit, and shrink fit,” as recited therein. Thompson describes a bushing 43 affixed to a crown region 15 of a bit body. “When crown 15 is constructed of a hard matrix material, bushing 43 may be constructed, for example, of steel and may be fixed in a recess 19 by molding of the bushing 43 in crown 15 during formation of crown 15. When crown 15 is made of steel, bushing 43 may be formed as an integral part of the crown. The threads may be cut in a recess 19 to receive a threaded sleeve 43.” Thompson, column 4, lines 29-35. Thompson does not describe, teach, or suggest affixing the bushing 43 to the crown 15 by one of welding, brazing, press-fit, and shrink fit. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 16 under 35 U.S.C. § 102(b) for this additional reason.

Regarding dependent claim 19, Applicants additionally assert that Thompson does not describe a drill bit wherein a “steel bit body...includes a plurality of retention recesses, each

retention recess extending into the bit body **from [a] substantially arcuate surface...**[of the steel bit body], at least a portion of [a] support element being disposed within a retention recess,” as recited therein. With reference to FIG. 2C, Thompson describes a locating means 61 provided in a planar base of a recess 19 for preventing rotation of cutting element 17 about the longitudinal axis of the element 17. Thompson, column 4, lines 58-60. “The locating means 61 may comprise, for example, a metal pin 62 passing through an aperture 64 in shim 60 and having the ends thereof fitted into a recess 63 formed in crown 15 and into a recess in the lower surface of stud 31, respectively.” Id., column 4, lines 60-65. The recess 63 does not extend into the bit body from a substantially arcuate surface of the bit body, as recited in dependent claim 19. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 16 under 35 U.S.C. § 102(b) for this additional reason.

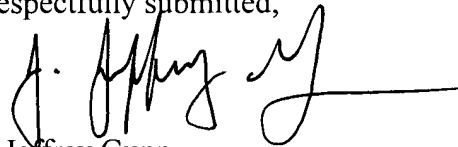
ENTRY OF AMENDMENTS

The amendments to claims 1 through 19 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1 through 19 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'J. Jeffrey Gunn', with a long horizontal flourish extending to the right.

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